

Graduate Immunology

Fall, 2010

Time: Monday, 9:10~12:00 a.m.

Place: Room 604

Textbook: Murphy, Travers and Walport, Janeway's Immunobiology, 7th
ed., 2008

| Date | Chapters | Topics | |
|-------|----------|--|-----|
| 9/13 | 1 | Basic Concepts in Immunology | 林以行 |
| 9/20 | 2 | Innate Immunity | 林以行 |
| 9/27 | 3 | Antigen Recognition by B-cell and T-cell Receptors | 林以行 |
| 10/4 | 4 | The Generation of Lymphocyte Antigen Receptors | 林以行 |
| 10/11 | 5 | Antigen Presentation to T Lymphocytes | 林以行 |
| 10/18 | 6 | Signaling Through Immune System Receptors | 林以行 |
| 10/25 | 7 | The Development and Survival of Lymphocytes | 林以行 |
| 11/1 | | Midterm Examination (Chapters 1-7) | |
| 11/8 | 8 | T Cell-Mediated Immunity | 黎煥耀 |
| 11/15 | 9 | The Humoral Immune Response | 黎煥耀 |
| 11/22 | 10 | Dynamics of Adaptive Immunity | 黎煥耀 |
| 11/29 | 11 | The Mucosal Immune System | 黎煥耀 |
| 12/6 | 12 | Failures of Host Defense Mechanism | 黎煥耀 |
| 12/13 | 13 | Allergy and Hypersensitivity | 黎煥耀 |
| 12/20 | 14 | Autoimmunity and Transplantation | 黎煥耀 |
| 12/27 | 15 | Manipulation of the Immune Response | 黎煥耀 |
| 1/3 | | Final Examination (Chapters 8-15) | |

Laboratory Animal Science 2010

Course coordinator: **Chun-Keung Yu** 余俊強(dckyu@mail.ncku.edu.tw)
Yau-Sheng Tsai 蔡曜聲(yaustsai@mail.ncku.edu.tw)
Pei-Jane Tsai 蔡佩珍(peijtsai@mail.ncku.edu.tw)

Class meetings: Monday 10:10-12:00 a.m.

Lecture Room: 602, School of Medicine

This is a cross-institutional course between NCKU School of Medicine and National Laboratory Animal Center-Southern Center (國家實驗動物中心南部設施). This one-semester two-credit lecture is designed for PhD and master students who are interested in using laboratory animals in biomedical research. We will introduce the knowledge and concept of the laboratory animal and select several critical topics relevant for their applications in biomedical research. The course will include lecture, site visit, and class discussion. In the final, everyone is required to submit a 4-page term paper.

Grading Policy: Presentation/Report 50%, Discussion/Participation 50%
(Students with absence more than 3 times will be considered Fail)

| <u>Date</u> | <u>Topic</u> | <u>Lecturer</u> |
|-------------|---|-----------------|
| 9/13 | Introduction | 蔡曜聲/蔡佩珍 |
| 9/20 | Surgery and surgical anatomy of laboratory animals | 黃思偉/蔡佩珍 |
| 9/27 | The use of laboratory animals in biomedical science & Defining laboratory animals | 余俊強 |
| 10/4 | Relevant laws and ethical issues of animal research | 吳建男/蔡佩珍 |
| 10/11 | Principle of anesthesia, anti-pain, and euthanasia | 何蓓音/蔡佩珍 |
| 10/18 | Nomenclature and genetic quality control of mice | 周傳凱/蔡曜聲 |
| 10/25 | Transgenic mice and mammals | 楊尚訓 |
| 11/1 | Gene targeting and knockout mice | 蔣思徹/蔡曜聲 |
| 11/8 | Modeling human disease in Zebrafish | 傅子芳 |
| 11/15 | Modeling human disease in <i>C. elegans</i> | 陳昌熙 |
| 11/22 | Modeling human disease in mice | 蔡曜聲 |
| 11/29 | NPRGM- Taiwan Mouse Clinic | 嚴仲揚/蔡曜聲 |
| 12/6 | NCKU Laboratory Animal Center & core facility | 方榮華/張文燦 |
| 12/14 | Site visit – NLAC-Southern Center (10:00~12:00 am Tuesday) | 蔡佩珍 |
| 12/20 | <i>In vivo</i> imaging system | 蔡佩珍 |
| 12/27 | NPRGM- Transgenic Mouse Model Core Facility | 游益興/林淑華 |
| 1/3 | Discussion | 蔡曜聲/蔡佩珍 |

2010 微生物致病機轉 (99 學年度秋季)
醫學檢驗生物技術、分子醫學研究所、基醫所

時間：星期一, 10:10-12:00 (二學分)

地點：醫技所 (5796)

課程協調人： 吳俊忠 (5605)，王貞仁(5786) (醫技所)

鄧景浩 (4595)，王憲威(4218) (分醫所)

| No. | Date | Topics | Lecturer |
|-----|-------|--|----------|
| 1. | 9/13 | An overview of bacterial pathogenesis | 吳俊忠 |
| 2. | 9/20 | Antibacterial agents and resistant mechanism | 顏經洲 |
| 3. | 9/27 | Applications of bioluminescence imaging on infectious diseases | 蔡佩珍 |
| 4. | 10/04 | Endotoxins | 何漣漪 |
| 5. | 10/18 | Bacterial adhesion and invasion of host cells | 鄧景浩 |
| 6. | 10/25 | Pathogenesis of <i>Escherichia coli</i> infection | 鄧景浩 |
| 7. | 11/01 | An overview of protozoan pathogenesis | 胥直利 |
| 8. | 11/08 | Immunity evasion by antigenic variation | 胥直利 |
| 9. | 11/15 | Midterm Exam | 鄧景浩 |
| 10. | 11/22 | An overview of viral pathogenesis | 王貞仁 |
| 11. | 11/29 | Acute phase response in infection | 劉清泉 |
| 12. | 12/06 | Virus and host interaction | 王憲威 |
| 13. | 12/13 | Viral hepatitis | 張定宗 |
| 14. | 12/20 | Viral evasion | 王憲威 |
| 15. | 12/27 | Viral oncogenesis | 楊孔嘉 |
| 16. | 1/03 | Immunopathogenesis of viral infections | 葉才明 |
| 17. | 1/10 | Final Exam | 王貞仁/王憲威 |

References :

1. Viral Pathogenesis and Immunity, Neal Nathanson ed. 2002, Lippincott Williams & Wilkins.
2. Field's Virology, David M. Knipe, Peter M. Howley ed., 5th ed, 2007, Lippincott Williams & Wilkins.
3. Bacterial Pathogenesis: A Molecular Approach, Salgers & Whitt 2002, ASM Press.
4. Cellular Microbiology, Cossart et al. 2000, ASM Press.

Grading: Written examinations and/or assigned written report; Midterm Exam (50%), Final Exam (50%)

生物醫學研究入門 (2010)

Introduction to research methods in biomedical sciences

Time: Monday 13:10-14:30

Credit: 1

Room: 602 教室

課程協調人：賴明德 (Tel: 5549; E-mail: a1211207@mail.ncku.edu.tw)

| 日期 | 主講人 | 題目 |
|-------|------------|-------------|
| 10/4 | 湯銘哲(生理所教授) | 給年輕博士班學生的建議 |
| 10/11 | 任卓穎(生理所教授) | 科學態度及方法 |
| 10/18 | 賴明德(生化所教授) | 博士班新生之生存技巧 |
| 10/25 | 楊倍昌(微免所教授) | 假說的形成 |
| 11/1 | 賴明德(生化所教授) | 批判性思考及數據分析 |
| 11/8 | 蕭瓊莉(微免所教授) | 影像數據之管理 |
| 11/15 | 余俊強(微免所教授) | 科學研究倫理 |
| 11/22 | 賴明德(生化所教授) | 閱讀文獻及科學演講 |

Code: S952400 (Institute of Clinical Medicine, 臨醫所)
Time: 3:10-5:00 pm, Monday @ Room 7063 of NCKU Hospital New Building (門診大樓 7F)
Credit: 2 credits, graded
Instructor: Patrick C.H. Hsieh (謝清河), M.D., Ph.D.
Assistant Professor, Institute of Clinical Medicine and Department of Surgery
Language: **English** (英文上課輔以中文解說)
Office hour: 2-3 pm on Monday or by appointment
Contact: 06-2353535 ext. 3653 or 3657, pshieh@mail.ncku.edu.tw

The course goal is to introduce students to updated fundamental knowledge, technological development and potential applications of stem cells. The focus on **experimental**, **translational** and **regenerative medicine** using stem cells will be introduced, including, but not limited to, cardiovascular disease, cancer, diabetes, bone and cartilage defect, and degenerative neural diseases. The course will combine textbook reading, faculty lectures, workshop, and presentation and discussion of journal articles or review articles. Due to the **multidisciplinary** nature of stem cell research, this course is particularly designed to fulfill and encourage students from diverse academic backgrounds including biology, biotechnology, engineering and medicine. As a **PBL course**, students will be evaluated mainly by class participation (40%), and presentations of a text chapter or journal article (20%), and a final proposal (40%).

References: 1. “*Essentials of Stem Cell Biology*”, edited by Robert Lanza et al. Academic Press, 2006.
2. “*Insight: Stem Cell Biology*”. *Nature*. 2006;441:1059-1102.
3. “*Insight: Regenerative Medicine*”. *Nature*. 2008;453:301-352.
4. “*Stem cells: Roadmap to the clinic*”. *JCI*. 2010;120:8-10.

Part I Basic stem cell biology—9 lectures, followed with a student presentation forum of text chapters or review articles in a specific topic selected from the lectures.

09/13 “Introduction and ethics for stem cell research” by Dr. Patrick Hsieh (謝清河)
09/20 “Embryonic stem cells” by Dr. Patrick Hsieh (謝清河)
09/27 “Molecular imaging and lineage tracing of stem cells” by Dr. Patrick Hsieh (謝清河)
10/04 “Molecular genetics and mouse development” by Dr. Yu-Tin Yan (顏裕庭), Academia Sinica
10/11 “Adult and fetal stem cells” by Dr. B. Linyu Yen (顏伶汝), NHRI
10/18 “Epigenetic controls of stem cells” by Dr. Cheng-Fu Kao (高承福), Academia Sinica
10/25 “Differentiation, dedifferentiation and transdifferentiation” by Chia-Ning Shen (沈家寧), Sinica
11/01 “Induced pluripotent stem (iPS) cells and” by Dr. Patrick Hsieh (謝清河)
11/08 “Cancer stem cells” by Patrick Hsieh (謝清河)
11/15 Student presentations—text chapters and review articles (謝清河)
11/21 Student presentations—text chapters and review articles (謝清河)

Part II Workshop & demonstration

11/29 “Differentiating mouse ES cells into cardiomyocytes”, 1-5 pm at Hsieh Lab (謝清河)

Part III Applied stem cell biology—4 lectures, followed with a student presentation forum of journal articles and final proposals.

12/06 “Stem cell therapy for cardiac regeneration” by Dr. Patrick Hsieh (謝清河)
12/13 “Stem cell therapy for neurodegenerative diseases” by Dr. Shun-Fen Tzeng (曾淑芬), NCKU
12/20 “Clinical cell transplantation for leukemia” by Dr. Tsai-Yun Chen (陳彩雲), NCKU
12/27 “Germ line stem cells” by Dr. Pao-Lin Kuo (郭保麟), NCKU
01/03 Student presentations—journal articles and final projects (謝清河)
01/10 Student presentations—journal articles and final projects (謝清河)

Scientific Reading and Writing in English

Fall, 2010

Time: 1:10-3:00 pm, every Tuesday

Place: Seminar room (82-1124) in Dept. Microbiology and Immunology (11th floor)

Course coordinator: Dr. Shu-ying Wang; E-mail: sswang23@mail.ncku.edu.tw

| Week | Date | Topic | Tutor |
|------|-------|---|---------------|
| 1 | 9/14 | Overview of manuscript preparation and submission | Shu-ying Wang |
| 2 | 9/21 | “Introduction” | |
| 3 | 9/28 | “Materials and Methods” | |
| 4 | 10/5 | Practice “Introduction” | |
| 5 | 10/12 | Practice “Materials and Methods” | |
| 6 | 10/19 | “Results” | |
| 7 | 10/26 | “Discussion” | |
| 8 | 11/2 | Practice “Results” | |
| 9 | 11/9 | Practice “Discussion” | |
| 10 | 11/16 | “Data Processing (Making figures and tables)” | Pin Ling |
| 11 | 11/23 | “Abstract” | |
| 12 | 11/30 | “Cover letter” | |
| 13 | 12/7 | “References, Acknowledgements, and Front page” | |
| 14 | 12/14 | Practice “Data Processing (Making figures and tables)” | |
| 15 | 12/21 | Practice “Abstract” | |
| 16 | 12/28 | Practice “Cover letter, References, Acknowledgements, and Front page” | |

Students: Ph.D. students of the Institute of Basic Medical Sciences and the second year Master students of Department of Microbiology and Immunology are encouraged to attend the class.

Requirements:

English will be the only language used in class. Students are requested to read articles before class and write their own manuscripts section by section after class. Each student

will be assigned to his/her major professor or a tutor who will correct and grade all the homework of student throughout the semester. **Students who want to take this course are required to obtain consent from their major professors to correct their homework. Major professors will be credited 5 seminar hours for participating in correcting the homework of each student.**

The goal of this course is to improve the ability of students to read and write scientific papers in English.

The specific objectives are:

- To be familiar with the format and writing of manuscripts and process of manuscript submission.
- To understand the common problems in medical writing and develop effective strategies to overcome them.
- To develop scientific and critical thinking.
- To develop effective strategies for reading scientific papers.

The course contains lectures and discussions on assigned articles or the manuscripts written by students. Students are graded based on their participation in class and manuscript writing skill.

Reference: Day RA and Gastel B. How to write and publish a scientific paper. 6th ed. 2006. Greenwood Press.

99 學年度高等分子生物學 (Molecular Biology Fall Semester 2010)

時 間：星期二、AM 9:10-12:00

地 點：第四講堂

協調人：張文祭教授 Tel: 5533

E-mail: wchang@mail.ncku.edu.tw

助 教：(5532)

將生物現象的種種機能循分子層次進行研究之分子生物學是生物學結合物理學、化學而發展出的新科學領域，隨著分子生物學之進展所開發出之基因工程技術，是探討生命科學奧妙，造福人類重要之科學技術之一。本課程以真核細胞分子生物為主，並補充介紹目前基因工程所採用之重要技術的理論、方法實驗與實例等。

此課程為醫學院生化，微免，分醫，醫技碩士班及基醫，臨醫博士班共同課程，前十堂課以講堂授課。將基本的 Genome, replication, transcription, translation, 及 bioinformatics 傳授重要之知識。其後六堂課，以小教室討論進行，其方式有兩種，一為由教師提出一個研究問題，由學生查尋 research articles 來加以回答，並共同討論；另一種方式則由教師提供研究論文，由學生分組討論。小教室討論時，由張明熙，張敏政，吳昭良，鄭宏祺，張文祭共同負責生化所碩士班學生。

Course Goals:

- 1) to assist graduate students in understanding the history and future challenge of molecular biology from discovery of DNA to genome sciences, and
- 2) to better students in gaining insight on how to utilize modern molecular biology tools and computational approaches in experimental design and problem shooting.

Course Format:

- 1) Lectures for 3 hr by teachers, or 2-hr lectures by teachers followed by student presentation (if assigned) or an impromptu examination for 1 hr or less. Interactive teaching is encouraged.
- 2) Each lecture note will be posted online (Department of Biochemistry and Molecular Biology website) or distributed after the class as hard copies (if agreed by the teacher).
- 3) Assigned reading(s) will be posted online (Department of Biochemistry and Molecular Biology website) one or two weeks before each class.
- 4) Homework will be given after each class.

Course Materials: GENE IX, 2008 and assigned readings.

Grading Criteria: Homework and final examination; 前 11 次上課考試原始成績將分送給各所負責開高等分子生物學之老師，於學期末再加入各所上課教學評分，由各所自行計算調整後送往教務處。

課程時間表

| Date | Topic | Lecturer |
|------------|---|----------|
| 9/14/2010 | Introduction: History & Molecular Biology of Diseases | 張文祭 |
| 9/21/2010 | Genome, Chromosomes and Nucleosomes | 陳昌熙 |
| 9/28/2010 | DNA Replication (Eucaryotic and Procaryotic) | 王憲威 |
| 10/5/2010 | DNA Recombination & Repair (Eucaryotic & Procaryotic) | 黃溫雅 |
| 10/12/2010 | Procaryotic Transcription | 鄧景浩 |
| 10/19/2010 | Procaryotic Translation | 鄧景浩 |
| 10/26/2010 | Eucaryotic Transcription | 吳佳慶 |
| 11/2/2010 | Eucaryotic Translation and Protein Degradation | 凌 斌 |
| 11/9/2010 | Protein Structure and Function | 王淑鶯 |
| 11/16/2010 | Molecular Biology of Carbohydrate | 鄭宏祺 |
| 11/23/2010 | Molecular Biology of Stem Cells | 謝清河 |
| 11/30/2010 | Final Examination | 張文祭 |
| 12/7/2010 | 基醫所 PBL (304D 教室) | 賴明德 |
| 12/14/2010 | 基醫所 PBL (304D 教室) | 賴明德 |
| 12/21/2010 | 基醫所 PBL (304D 教室) | 賴明德 |
| 12/28/2010 | 基醫所 PBL (304D 教室) | 賴明德 |
| 1/4/2011 | 基醫所 PBL (304D 教室) | 賴明德 |

12/7/2010、12/14/2010、12/21/2010、12/28/2010、1/4/2011 為 PBL 課程，請各所自行安排課程及準備教室。

- 生化所碩士班張文祭老師負責。
- 分醫所碩士班由張南山、蔣輯武老師負責。
- 醫技所碩士班學生由楊孔嘉、黃溫雅老師負責。
- 微免所碩士班學生由微免所楊倍昌老師負責。
- 基醫所、臨醫所博士班學生分別由賴明德、呂佩融老師負責。
- 其他外系所學生，視其選修系所科目，由該選修系所負責。各系所老師自行斟酌是否接受選修。
- Coordination 99 年由生化所負責。

Course Rule for Students

Skipping classes, or being late for attending classes, is strongly discouraged. If you are caught for 3 times from skipping classes, you will be dismissed or flunked.

Advanced Immunology

Fall, 2010

Time: Tuesday, 9:10~12:00 a.m.

Place: 11th Floor, Lecture Room

| Date | Topics | |
|---|---|-----------------|
| Immune Cell Activation, Signaling and Regulation | | |
| 1. 9/14 | Immune cell activation and signaling (I) | 林以行 |
| 2. 9/21 | Immune cell activation and signaling (II) | 林以行 |
| 3. 9/28 | Innate immune signaling | 凌斌 |
| 4. 10/5 | Immunoregulation (I) | 徐麗君 |
| 5. 10/12 | Immunoregulation (II) | 徐麗君 |
| 6. 10/19 | Apoptosis and Autophagy | 林秋烽 |
| Immunologic Therapy and Clinical Immunology | | |
| 7. 10/26 | Vaccines-molecular aspect | 黎煥耀 |
| 8. 11/2 | Vaccines-immunological aspect | 黎煥耀 |
| 9. 11/9 | Immunobiology of EV71 infection | 余俊強 |
| 10. 11/16 | Immunobiology of EBV infection | 蘇益仁/張堯 |
| 11. 11/23 | Immunobiology of HBV & HCV infection | 蔡順隆 |
| 12. 11/30 | Tumor immunology | 楊倍昌 |
| 13. 12/7 | Autoimmune diseases | 王崇任 |
| 14. 12/14 | Antibody engineering | Robert Anderson |
| 15. 12/21 | Allergic diseases | 王志堯 |
| 16. 12/28 | Transplantation | 李伯璋 |
| 17. 1/4 | Conclusion and Discussion | 黎煥耀/林以行 |

Introduction to Research - Fall 2010

Course Objective: This course introduces graduate students to ethical, biosafety, communication and methodological aspects of biomedical research. Students will (a) examine basic methodologies of experimental research; (b) follow conceptual and methodological development of selected fields of biomedical sciences, and (c) apply one or more methodologies to your own research.

Course Format: It consists of weekly meetings of 2 hours in duration and each topic will be covered in 2 sequential sessions with a combination of informal didactic presentation by the faculty, as well as discussion and presentation by the students. **English** is used in the classroom and in written reports.

Grading Criteria: Students are evaluated based on attendance and classroom performance (20%), team presentation of animal models (30%), mid-term report (20%), and Final report (30%).

Time: Tuesdays 13:10 - 15:00

Classroom: Lecture Room 2, B1 floor, Uni-President Health & Research Building
統一健康研究大樓 B1 樓 第二會議室

Coordinator: Christina Chang 張玲(ext. 3615) & Chi-Wu Chiang 蔣輯武(ext. 3637)

Teaching Assistant: Li-Tsen Ou 歐俐岑(ext.3621)

| Date | Topic | Lecturers |
|------------|--|---------------------|
| 09/14/2010 | Doing research & scientific integrity | Christina Chang 張玲 |
| 09/21/2010 | Keeping lab records | Christina Chang 張玲 |
| 09/28/2010 | Scientific reading | Li-Wha Wu 吳梨華 |
| 10/05/2010 | Communication skills | Chi-Wu Chiang 蔣輯武 |
| 10/12/2010 | Scientific writing | Shainn-Wei Wang 王憲威 |
| 10/19/2010 | Biological and lab safety | Ching-Hao Teng 鄧景浩 |
| 10/26/2010 | Animal models for human disease | Anna Jang 張純純 |
| 11/02/2010 | Job opportunity in Asian Biotech companies – a PerkinElmer example | Denise Lau |
| 11/09/2010 | Mid-term report due | 張玲 |
| 11/16/2010 | Methodology in Cell Biology | Li-Wha Wu 吳梨華 |
| 11/23/2010 | Methodology in Bacteriology | Ching-Hao Teng 鄧景浩 |
| 11/30/2010 | Methodology in Genetics and Epigenetics | Yi-Ching Wang 王憶卿 |
| 12/07/2010 | Methodology in Virology | Shainn-Wei Wang 王憲威 |
| 12/14/2010 | Methodology in Protein Chemistry and Proteomics | Nanshan Chang 張南山 |
| 12/21/2010 | Methodology in Molecular Biology | Chi-Wu Chiang 蔣輯武 |
| 12/28/2010 | Project Management | Larry Paris |
| 01/04/2011 | Research resources (e.g., databases, tools, protocols) | Christina Chang 張玲 |
| 01/11/2011 | Final report due | 張玲 |

Infectious Diseases (感染症學)

2010 Fall Semester

時間：星期三 (Wednesday) , 9:10 - 12:00

地點：11 樓研討室 (82-1124)

- | | | | |
|-----|-------|--|-------------|
| 1. | 9/15 | Introduction (9:10-10:00) | 黎煥耀/吳俊忠 |
| 2. | 9/29 | Epidemiology of infectious disease/Influenza virus | 蘇益仁/王貞仁 |
| 3. | 10/6 | Dengue virus | 黎煥耀/劉清泉 |
| 4. | 10/13 | Dengue virus | 黎煥耀/劉清泉 |
| 5. | 10/20 | Hepatitis virus | 張定宗/賴明德 |
| 6. | 10/27 | Hepatitis virus | 賴明德/呂政展 |
| 7. | 11/3 | Enterovirus | 劉清泉/黎煥耀 |
| 8. | 11/10 | Enterovirus | 劉清泉/黎煥耀 |
| 9. | 11/17 | Drug resistance | 顏經洲/柯文謙/吳俊忠 |
| 10. | 11/24 | Drug resistance | 顏經洲/柯文謙/吳俊忠 |
| 11. | 12/1 | <i>Vibrio vulnificus</i> | 何漣漪/莊銀清 |
| 12. | 12/8 | <i>Vibrio vulnificus</i> | 何漣漪/莊銀清 |
| 13. | 12/15 | Group A Streptococcus | 林以行/劉清泉/吳俊忠 |
| 14. | 12/22 | Group A Streptococcus | 林以行/劉清泉/吳俊忠 |
| 15. | 12/29 | <i>Helicobacter pylori</i> | 黎煥耀/吳俊忠 |
| 16. | 1/5 | <i>Helicobacter pylori</i> | 黎煥耀/吳俊忠 |

Coordinators: 黎煥耀/吳俊忠/劉清泉

感染症學是主題式的課程，以全球新興的傳染性疾病，在台灣地區也是很重要的健康問題，選擇成大醫學中心及相關的單位有專精的研究人員有興趣的主題，包括流行性感冒病毒、登革病毒、腸病毒、肝炎病毒、幽門桿菌、A 型鏈球菌、創傷弧菌、及細菌抗藥性等八個子題，做為討論的內容，每個主題有二次課，每次課至少一位臨床醫學的教師及一位基礎醫學的教師參與，先由老師做概況性的介紹，再根據事先提供的資料由參與的師生以討論為主。其目的在以教學的主題為手段，促進傳染性疾病的學術研究，不僅結合基礎與臨床，更期望能利用此課程將成大醫學中心、國衛院臨床組、及疾病管制局三個單位整合，做理論與實務的配合。

Infectious Diseases Course

The “Infectious Diseases” course is a 3-credit course that is offered in the Fall semester by Institute of Basic Medical Sciences, College of Medicine, National Cheng Kung University. It is a selective course for the Ph.D. students. The aim of this course is to give student in-depth knowledge and current research focus on the emerging infectious diseases. The course is topic-oriented. We have selected 8 important topics based on the area of specialty of the faculty and the important and emerging infectious disease worldwide as well in Taiwan. It includes influenza virus, dengue virus, hepatitis virus, enterovirus, *Helicobacterium pylori*, *Vibrio vulnificus*, group A streptococcus, and drug resistance. Every topic has at least two faculties (one clinician and one basic science researcher) to joint together to teach the class. There are two lectures for each topic, the first one will be introduced by clinical faculty about the disease, then followed by basic science faculty to lead the discussion on the recent development on research topic. It is a research topic-oriented teaching, emphasizing the group discussion and interaction. We expect to coordinate the resource of the Cheng Kung Medical Center, Division of Clinical Medicine, NHRI, and Center for Diseases Control, aim to promote the academic standard of infectious disease study in Taiwan.

Cell Biology (I)

(2010 Fall)

Time: Wednesday **13:10 ~ 15:00**

Place: 1st Lecture Hall

Coordinator: Dr. C. J. Jen (ext. 5439)

Textbook: Molecular Biology of THE CELL, 5th ed.

| Date | Ch. | Topic | Instructor |
|--------------|--------------|--|-------------------|
| 09/15 | | Introduction of the course (I) | Dr. C. J. Jen |
| 09/15, 29 | 10, 11 | Membrane structure/Membrane transport | Dr. Y. M. Kuo |
| 10/06 | | Discussion (Ch. 10, 11) | ” |
| 10/13, 20 | 12, 13 | Intracellular compartments/Proteins/Vesicles | Dr. C. J. Jen |
| 10/27 | | Discussion (Ch. 12, 13) | ” |
| 11/03 | 14 | Energy conversion: mitochondria | ” |
| 11/10,17 | 15 | Cell communication | Dr. P. Ling |
| 11/24 | | Discussion (Ch. 15) | ” |
| 12/01, 08 | 16 | Cytoskeleton | Dr. M. J. Jiang |
| 12/15 | | Discussion (Ch. 16) | ” |
| 12/22, 29 | 17, 18 | Cell cycle/Apoptosis | Dr. C. W. Chiang |
| 01/05 | | Discussion (Ch. 17, 18) | ” |
| 01/12 | 10-18 | Examination (30%) | Dr. C. J. Jen |

Please note:

- 1. This course is designed for students who already have sufficient background knowledge in basic cell biology, e.g., materials covered by “Essential Cell Biology,” an introductory textbook by the same authors.**
- 2. The goal of this course is to provide students a conceptual framework of cell biology, not the most updated information about cells.**
- 3. Those who wish to learn more about any specific topic should take other advanced courses.**
- 4. As the gene-related topics are covered by various Molecular Biology courses, they are not included in this course.**
- 5. The course content includes both lectures and discussions.**
- 6. The lectures essentially follow the materials in Part IV (and Part V in the Spring semester) of the textbook and the discussions focus on pre-assigned questions.**
- 7. At the beginning of the course, students are divided into 6 study groups (~ 5 students per group) by the course coordinator.**
- 8. Each group should study together in order to prepare a short PowerPoint file for all assigned questions. This PPT file must be submitted via i-teach website before the discussion session.**
- 9. Discussion grades (70%) include group grades (30%), individual grades (30%), and student peer evaluation grades (10%).**
- 10. The final examination (30%) covers the text materials in Part IV.**

About the “Discussion”:

- 1. The evaluation of “group grade” is based on the preparation and presentation of PPT files.**
- 2. The presenter is assigned by the instructor during the Discussion session. This presentation is given a “group grade,” which will be used to adjust his or her own “individual grade” as well.**
- 3. The “individual grade” is based on each student’s comments on the presentations. Students may voluntarily give comments or be called to give comments by the instructor.**
- 4. Each comment is given a 0 ~ +5 grade, according to the performance, to add to the student’s “individual grade.”**
- 5. Individuals absent in a Discussion session without permission will get a “Fail” individual grade for that particular session.**
- 6. Groups that do not submit the PPT file before the Discussion session will get a “Fail” group grade for that particular session.**

Neuroscience Courses (Fall 2010)

| Date | Topics | Lecturer |
|-------|---|----------|
| 9/15 | Introduction | 許桂森 |
| 9/22 | 中秋節放假 | |
| 9/29 | Genes and behaviors | 黃阿敏 |
| 10/6 | Neurogenesis and migration | 曾淑芬 |
| 10/13 | Growth cones and axon path finding | 吳豐森 |
| 10/20 | Axonal transport, autophagy and neurodegeneration | 何盧勳 |
| 10/27 | Synapse formation and elimination | 吳豐森 |
| 11/3 | Neuronal programmed cell death | 莊季瑛 |
| 11/10 | Spinal cord injury and axonal regeneration | 許鍾瑜 |
| 11/17 | Wakefulness and sleep | 蕭富仁 |
| 11/24 | Functional brain image | 姚維仁 |
| 12/1 | Alzheimer's disease | 郭余民 |
| 12/8 | Synaptic plasticity in amygdala | 簡伯武 |
| 12/15 | Cognitive development and aging | 黃朝慶 |
| 12/22 | Synaptic plasticity in hippocampus | 許桂森 |
| 12/29 | Drug reward and addiction | 游一龍 |
| 1/5 | Huntington's Disease | 楊尚訓 |
| 1/12 | Neuropsychiatric disorders | 陳柏熹 |

上課時間: 週三 9:10 a.m.-12:00 p.m.

上課地點: 8F 82-0824

Coordinator: 許桂森老師 (TEL: 2353535 ext. 5498)

E-mail: richard@mail.ncku.edu.tw

上課方式: 由授課老師自行決定

參考書籍: Principles of Neural Science (4th Edition)

學期成績: 討論表現與上課參與度

2010 癌症特論 Version 1 2 credit hours

Wednesday PM 4:00-6:00

Room: 602 課程協調人：賴明德 (Tel: 5549; E-mail: a1211207@mail.ncku.edu.tw)

上課教師及上課內容

| | | |
|-------|-----------------------------------|-----|
| 9/15 | Introduction | 賴明德 |
| 9/29 | Ras signalling | 劉校生 |
| 10/6 | Angiogenesis | 吳梨華 |
| 10/13 | Cervical cancer and ion exchanger | 沈孟儒 |
| 10/20 | Pin1 | 呂佩融 |
| 10/27 | Oral cancer | 謝達斌 |
| 11/3 | MicroRNA and Cancer | 陳玉玲 |
| 11/17 | Lung cancer epigenetics | 王憶卿 |
| 11/24 | Genomic Instability | 黃溫雅 |
| 12/1 | Bladder cancer and Ron | 周楠華 |
| 12/8 | Tumor metastasis | 張玲 |
| 12/15 | WWOX/WOX1 tumor suppressor | 張南山 |
| 12/22 | Src and eps8 | 呂增宏 |
| 12/29 | Targeted metastasis | 鄭宏祺 |
| 1/5 | DNA vaccine | 賴明德 |
| 1/12 | Final Discussion | 賴明德 |

選課學生：歡迎新進入各實驗室之碩一及博一學生修課

課程目的：新進入癌症實驗室之研究生了解各實驗室之研究方向及研究技術，以加強各團隊成員之間合作。

授課教師：歡迎本院從事癌症研究之教師及醫師參與

課程內容：各實驗室研究內容，請包含

- (1) Background and rationale,
- (2) Significance of research project,
- (3) Experimental approaches,
- (4) Current research progress

期末報告：交學生自己實驗室及其他任一相關實驗室之研究內容報告。

成績：上課簽名 40%，有簽未到者三次以不及格論。期末報告 60%

以問題為導向學習癌症轉移 Problem-Based Learning in Cancer Metastasis

時間：Wednesday PM 1:10-3:00

地點：82-0929

修課學生：碩、博士生

學分數：2 credit hour

課程協調人：鄭宏祺 (Tel: 5544; e-mail: hungchi@mail.ncku.edu.tw)

課程介紹：

癌症轉移(cancer metastasis)是癌症病患致死的主要原因。在無法完全防止癌症形成之際，若可試圖阻斷癌細胞轉移，將會是一個極具發展潛力的方向。雖然過去癌症轉移之分子機制已有一定的瞭解，但目前科學家仍不斷地探討及更新癌症轉移機制，並發表成果於世界各大知名期刊。若學生能在學習已知癌症轉移知識之餘，更能從最新發表成果以**問題為導向**來學習最新資訊，將有助於**提升對於癌症轉移研究的興趣**，且提高**未來投入此研究領域與相關論文寫作能力**的可能性。

Metastasis is the major cause of cancer mortality. While there is still lacking of a treatment capable of completely preventing tumorigenesis, efficiently impeding cancer metastasis will be a potentially powerful cancer therapeutic strategy. Although it has been understood to a certain degree, the molecular mechanism of cancer metastasis is still been vigorously explored and updated, which has been continuously published in the renowned international journals with high impact factors. In addition to learning the knowledge of cancer metastasis from textbook and literature, this course may provide students the problem-based learning in the most updated publications, which will help raise their interests and devote themselves in cancer metastasis researches and enhance their critical thinking and thesis-writing comprehensions.

課程大綱：

本課程依癌症轉移可能分子機制之先後順序，由授課老師首先講授過去文獻教科書中已知的知識，再讓小組學生經由**閱讀最新癌症轉移相關的文獻並互相討論或爭辯**，去發現許多**問題 (problems)**，經由**自我學習及團隊合作**，來獲得不易遺忘而且可解決問題的知識，進而訓練**有效率解決問題及論文寫作**之能力。最後，再由授課老師進行總結及評論。

According to the likely molecular cascades of cancer metastasis, this course will be initiated by the lecturing professors in giving the background knowledge. Subsequently, students will be divided into groups to read pre-selected papers. By either mutually discussing or logically arguing, students will be asked to raise problems (questions) and then unforgettably solve them via self-learning as well as collaborations, the purposes of which are to train students in proficiently unraveling problems and in thesis-writing comprehension. The lecturing professors will give the final conclusion in the end of each discussion.

九十九學年度
以問題為導向學習癌症轉移
Problem-Based Learning (PBL) in Cancer Metastasis

時間：Wednesday PM 1:10-3:00

地點：82-0929

修課學生：碩、博士生

學分數：2 credit hour

課程協調人：鄭宏祺 (Tel: 5544; e-mail: hungchi@mail.ncku.edu.tw)

| | | |
|-------|--|-----|
| 09/15 | Introduction | 鄭宏祺 |
| 09/22 | 中秋節 | |
| 09/29 | Overview of cancer metastasis | 鄭宏祺 |
| 10/06 | Early diagnostic and prognostic biomarkers for cancer metastasis | 鄭宏祺 |
| 10/13 | PBL | 鄭宏祺 |
| 10/20 | EMT, stem cells, and cancer metastasis | 鄭宏祺 |
| 10/27 | PBL | 鄭宏祺 |
| 11/03 | Tumor immunology in Cancer metastasis | 凌斌 |
| 11/10 | PBL | 凌斌 |
| 11/17 | Midterm exam | 鄭宏祺 |
| 11/24 | Angiogenesis and cancer metastasis | 吳梨華 |
| 12/01 | PBL | 吳梨華 |
| 12/08 | Epigenetics in Cancer metastasis | 王憶卿 |
| 12/15 | PBL | 王憶卿 |
| 12/22 | Clinical aspects in cancer metastasis | 曾堯麟 |
| 12/29 | PBL | 曾堯麟 |
| 01/05 | Therapeutic strategies against cancer metastasis | 鄭宏祺 |
| 01/12 | Final exam | 鄭宏祺 |

Note

Suggested questions that can be asked in PBL to understand a paper about cancer metastasis:

1. What does the title mean?
2. What unresolved phenomena (problems) did authors observe?
3. In terms of solving the problems, how did authors use literature to find out what have been and not been done?
4. What was the rationales did authors use to come up with their hypothesis?
5. What experiments did authors design to tackle the problems or to prove their hypothesis?
6. How did authors discuss about the impact that this study can provide?

**九十九學年度第一學期
高等神經生理學
(Advanced Neurophysiology)**

Time: Wednesday 13:10-15:00

Place: 8F Conference room: No. 82-0811

Score: 2

| Date | Topic | Lecturer |
|-------------|---|-----------------|
| 1. 9/15 | Introduction to Neurophysiology | Kuei-Sen Hsu |
| 2. 10/6 | Nerve cells and Behavior | Kuei-Sen Hsu |
| 3. 10/13 | Cell and Molecular Biology of the Neuron (I) | Kuei-Sen Hsu |
| 4. 10/20 | Cell and Molecular Biology of the Neuron (II) | Kuei-Sen Hsu |
| 5. 10/27 | Synaptic Transmission (I) | Kuei-Sen Hsu |
| 6. 11/3 | Synaptic Transmission (II) | Kuei-Sen Hsu |
| 7. 11/10 | Synaptic Transmission (III) | Kuei-Sen Hsu |
| 8. 11/17 | The Neural Basis of Cognition | Kuei-Sen Hsu |
| 9. 11/24 | Perception (I) | Kuei-Sen Hsu |
| 10. 12/1 | Perception (II) | Kuei-Sen Hsu |
| 11. 12/8 | The Development of Nervous System | Kuei-Sen Hsu |
| 12. 12/15 | Learning and Memory (I) | Kuei-Sen Hsu |
| 13. 12/22 | Learning and Memory (II) | Kuei-Sen Hsu |
| 14. 12/29 | Student Presentations | |
| 15. 1/4 | Student Presentations | |
| 16. 1/11 | Student Presentations | |

Textbook: Principles of Neural Science (Fourth Edition) Edited by Eric R. Kandel, James H. Schwartz and Thomas M. Jessell (2000).

9/2/2010

Protein Chemistry and Enzymology

2010 1st Semester

Lecture hour: Thursday, 10:10-12:00 AM

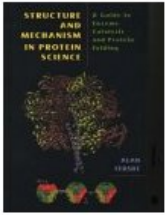
Course Co-coordinators: Wu, Hua-Lin and Chuang, Woei-Jer

Location: 601

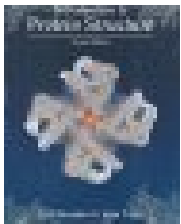
| Lecture | Date | Topics | Lecturer |
|---------|-------|--|----------|
| 1 | 9/16 | Protein purification and characterization | Chuang |
| 2 | 9/23 | Protein structure (1) | " |
| 3 | 9/30 | Protein structure (2) | " |
| 4 | 10/7 | Protein structure (3) | " |
| 5 | 10/14 | Protein structure (4) | " |
| 6 | 10/21 | Determination of protein structures by X-ray crystallography | " |
| 7 | 10/28 | Determination of protein structures by nuclear magnetic resonance spectroscopy | " |
| 8 | 11/4 | Chemical catalysis (1) | Wu |
| 9 | 11/18 | Chemical catalysis (2) | " |
| 10 | 11/25 | Chemical catalysis (3) | " |
| 11 | 12/2 | Protein engineering | Chang |
| 12 | 12/9 | Steady state kinetics (1) | Wu |
| 13 | 12/16 | Steady state kinetics (2) | " |
| 14 | 12/23 | Steady state kinetics (3) | " |
| 15 | 12/30 | Presteady state kinetics | Chuang |
| 16 | 1/6 | Protein bioinformatics | " |

TEXTBOOKS (1-2) AND REFERENCES (3-5)

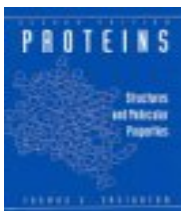
1. **Structure and Mechanism in Protein Science, 2nd edition, by Alan Fersht (1999).**



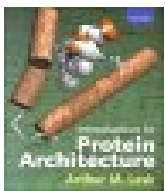
2. **Introduction to Protein Structure, 2nd edition, by Carl Branden and John Tooze (1999).**



3. **Proteins, Structures and Molecular Properties, 2nd edition, Thomas E. Creighton (1993).**



4. **Introduction to Protein Architecture: The Structural Biology of Proteins by Arthur M. Lesk (2001).**



5. **Protein Structure and Function by Gregory A Pesko (2006)**



生長基因及致癌基因
Mitogenes and Oncogenes
(Fall semester, 2010)

Coordinator: 呂增宏老師 分機:5468

時間:星期四 10:10-12:00 AM

教室: 8樓藥理所 0824 教室

| <u>日期</u> | <u>講 題</u> | <u>老 師</u> |
|-----------|--|------------|
| 9/16 | Protein modification and protein-protein interaction | 呂增宏 |
| 9/23 | Growth factors and receptor tyrosine kinases | 呂增宏 |
| 9/30 | Heterotrimeric G proteins | 呂佩融 |
| 10/7 | Ras and its effectors | 劉校生 |
| 10/14 | RAF, MEK, and MAPK | 凌 斌 |
| 10/21 | Cdc42, Rac, and Rho | 鄭宏祺 |
| 10/28 | Stats | 蘇五洲 |
| 11/11 | 校慶 | 停課 |
| 11/18 | Nonreceptor tyrosine kinases: Src and FAK | 呂增宏 |
| 11/25 | Midterm Examination | 呂增宏 |
| 12/2 | Nuclear DNA-binding proteins: Jun,Fos,NF- B | 陳炳焜 |
| 12/9 | Tumor suppressors Rb and p53 | 王育民 |
| 12/16 | HAT and HDAC | 洪建中 |
| 12/23 | Epigenetic regulation in oncogenesis | 王憶卿 |
| 12/30 | Aurora-A kinase | 洪良宜 |
| 1/6 | Cell apoptosis | 林秋烽 |
| 1/13 | Final examination | 呂增宏 |

高等生物技術 (Advanced Biotechnology) (2010-2011) (99/08/30 修訂)

上課學期：99 學年度第一學期 上課時間：星期五上午 10:10 ~ 12:00

上課地點：醫學院 602 教室 協調老師：張文燦

課程目的：各授課教師針對其專精的生物技術，教導其做法、最新進展及應用。

評分方式：課中討論(50%)；期末討論(50%)

| Date | Topic | Lecturer |
|----------|---|----------|
| 09/17/10 | Introduction | 張文燦 |
| 09/24/10 | Differential display | 黃阿敏 |
| 10/01/10 | Research methods for cancer metastasis | 鄭宏祺 |
| 10/08/10 | Microarray | 吳梨華 |
| 10/15/10 | RNAi and its applications | 張文燦 |
| 10/22/10 | Transgenic and knockout mice | 蔡曜聲 |
| 10/29/10 | Gene delivery systems | 王憲威 |
| 11/05/10 | Application of high-throughput screening technologies in chemical genetic and reverse genetic studies | 陳昌熙 |
| 11/12/10 | Mid-term discussion | 張文燦 |
| 11/19/10 | Methods for analyzing protein kinase signaling | 凌斌 |
| 11/26/10 | Yeast-two-hybrid system | 黃溫雅 |
| 12/03/10 | Proteomics | 廖寶琦 |
| 12/10/10 | Protein-protein interaction | 吳華林 |
| 12/17/10 | Non-conventional analysis of large-scale proteins | 蔡美玲 |
| 12/24/10 | X-ray crystallography | 王淑鶯 |
| 12/31/10 | Mini-culture system and live cell recording | 何中良 |
| 01/07/11 | Confocal microscopy and image processing | 沈孟儒 |
| 01/14/11 | Final discussion | 張文燦 |

99 學年度 老化研究特論 (Special Topics on Aging Research)

這門課程的目標，是期望將老化研究領域中的重要文獻背景做回顧，並探討最近的突破與發現。並希望藉由介紹老化研究領域的研究模式，讓學生能從單一細胞老化、到生物體的衰老及與老化相關疾病如癌症、神經退化疾病的產生的已知機制與模式能有廣泛的認知。

時 間：Friday AM 10:10-12:00

地 點：醫學院 303D 教室

協調人：蔣輯武老師 (分醫所) Tel: 3637 陳昌熙老師 (生化所) Tel: 5548

| <u>Date</u> | <u>Topic</u> | <u>Lecturer</u> |
|-------------|--|-----------------|
| 9/18 | Introduction to aging: theory and research | 蔣輯武 |
| 9/25 | Keys to longevity | 陳昌熙 |
| 10/02 | The molecular genetics of aging | 蔣輯武 |
| 10/09 | From cell dividing to cell senescence | 蔣輯武 |
| 10/16 | Aging in model animals | 陳昌熙 |
| 10/23 | Mitochondria and aging | 莊季瑛 |
| 10/30 | Cell senescence, oncogene, and cancer | 吳梨華 |
| 11/06 | Oxidative stress and aging | 莊季瑛 |
| 11/13 | Hormones and longevity | 陳麗玉 |
| 11/20 | Molecular basis of neurodegeneration | 張南山 |
| 11/27 | The molecular pathogenesis of Alzheimer disease in aging | 郭余民 |
| 12/04 | Reproductive aging | 郭保麟 |
| 12/11 | Metabolism, calorie, and aging | 張 玲 |
| 12/18 | Discussions on aging research | 陳昌熙 |
| 12/25 | Discussions on aging research | 蔣輯武 |
| 01/08/10 | Discussions on aging research | 蔣輯武 |
| 01/15/10 | Final reports | 蔣輯武 |

Class format

The class will include lectures and journal club in some of the topics.

Each student is required to present a paper assigned by the instructor.

~The grade for this class will be given by evaluating participations in the class (20%) and performances in the journal club (40%) and a final report (40%).

~ Turn in the final report no later than 5 pm on Jan 15, 2010.

~The final report should be typed in A4 paper with 6-page limit, including cover page